

SUPPORT FOR THE AMENDMENTS

Support for the amendment to Claim 1 is found on page 5, lines 6-22, beginning on page 13, line 9 and bridging to page 17, line 17, and beginning on page 17, line 19, and bridging to page 20, line 1, in the specification.

No new matter is added to this application by entry of this amendment.

Claims 1-21 are active. Claims 14-21 are Withdrawn.

REMARKS/ARGUMENTS

The claimed invention is directed to a method for the production of an upgraded coal wherein the problems associated with the use of hydrogen gas are not involved and the solvent may be recycled, without being rehydrogenated.

The claimed invention addresses this problem by providing a method for producing upgraded coal according to independent Claim 1 and Claims dependent thereon.

Applicants wish to thank Examiner Zhu for the useful and courteous discussion of this application with Applicants' U.S. representative on November 13, 2008. At that time, Applicants' U.S. representative reviewed and contrasted the description of the cited references to the claimed invention. Particular emphasis was directed to the fact that both Brink and Miller recite the presence of **hydrogen pressure during treatment of the coal with solvent**. Adding negative limitations to the independent claim of the present invention as supported in the original specification and claims was discussed. The following reiterates and expands upon the discussion.

Applicants respectfully note that Claim 1 is herein amended to include the underlined descriptions:

“mixing a low rank coal and an organic solvent in a slurry preparation tank that is not under hydrogen pressure, to prepare a raw material slurry;

aging the raw material slurry in an aging tank that is not under hydrogen pressure by heating to extract a soluble component of the low rank coal in the organic solvent to prepare an extracted slurry;”

Applicants have described the need for a method to upgrade coal which does not use expensive hydrogen and indicate the claimed invention addresses this problem, beginning on page 4, line 24, and bridging to page 5, line 14, in the specification, as follows:

“Furthermore, the conventional coal upgrading method uses, as the solvent, a hydrogen donor substance such as tetralin or the like for increasing the coal dissolving power, or a nitrogen-containing solvent such as N-methylpyrrolidinone or coal tar, and thus the method is disadvantageous to industrial production for the following reasons:

Since the hydrogen donor solvent loses its hydrogen donating property in extraction, the solvent must be re-hydrogenated for recycling the solvent. However, **hydrogen is very expensive, and there has been found substantially no example of commercial application in the field of metallurgical use.** The nitrogen-containing solvent has excessively high compatibility with coal, and thus the solvent and the extracted coal are bonded together, thereby failing to recover the solvent. This causes the problem of failing to recycle the solvent.

Applicants have described that an object of the current invention is to provide a method to upgrade a low rank coal **that does not suffer from the above problems, i.e., use of hydrogen gas.**

In description of embodiments 1 and 2 (Fig. 1 and Fig. 2), no use of hydrogen gas and no hydrogen vessel or line is described or suggested. Such use would be in opposition to the stated invention objective.

Example 4 on page 50 of the specification and Fig. 9 shows the efficiency of repeated recycle of extraction solvent without hydrogenation, according to the method of the claimed invention.

Applicants therefore respectfully submit that a problem associated with the use of hydrogen gas is described and the method according to Claim 1 and claims dependent thereon address this problem by not using hydrogen gas as described. No such process is disclosed or suggested in the cited references.

The rejection of Claims 1, 2 and 10 under 35 U.S.C. 102(b) and Claims 3-7, 9 and 11-13 under 35 U.S.C. 103(a) over Brink et al.(U.S. 4,045,187) is respectfully traversed.

Brink describes a process for the manufacture of coke by deoxygenation and removal of water comprising heating the carbonaceous material in intimate contact with a liquid solvent, a hydrogen carrier and hydrogen under pressure. (Claim 11 in pertinent part) Claims 3-7, 9 and 11-13 all depend directly or indirectly from Claim 1 and therefore, based on the above discussion cannot render obvious the claimed invention.

In view of the above, Applicants respectfully submit that the cited reference cannot anticipate or render obvious the claimed invention. Accordingly, withdrawal of the rejection of Claims 1, 2 and 10 under 35 U.S.C. 102(b) and Claims 3-7, 9 and 11-13 under 35 U.S.C. 103(a) over Brink is respectfully requested.

The rejection of Claim 8 under 35 U.S.C. 103(a) over Brink in view of Miller (U.S. 4,617,105) is respectfully traversed. Applicants respectfully note that Claim 8 directly depends from Claim 1.

Miller is cited to show the use of a nitrogen atmosphere in the extraction process. However, Miller describes an improved process for thermal solvent refining or hydrolification of non-anthracitic coal at elevated temperatures under hydrogen pressure in a hydrogen donor solvent (Abstract) and therefore suffers the same deficiency as the

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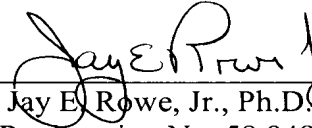
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primary reference. Applicants respectfully submit that the combined references therefore cannot render the claimed invention according to Claim 8, obvious, and withdrawal of the rejection of Claim 8 under 35 U.S.C. 103(a) over Brink in view of Miller is respectfully requested.

Applicants respectfully submit that the claimed invention is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

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